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GEOGRAPHICAL VISUALIZATION

To the January, 1913, number of the *Geographische Zeitschrift* (pp. 35-39) Professor Hettner contributes a suggestive paper with the above title. In it he analyzes the nature of visualization and then deduces from this analysis the proper principles of geographical instruction.

Visualization, he says, is of two kinds: sensual and mental. The one is gained directly through the senses, the other through the coordination of concepts in the mind. After long neglect, pedagogy in general and geographical teaching in particular are at present emphasizing the method of direct appeal to the senses. This is as it should be. Geographical excursions should form an integral part of all geographical instruction, whether elementary or advanced, and free use should be made of photographs, lantern slides, etc., as illustrative material.

However, it must not be overlooked that visual instruction has its limitations—limitations of a diverse nature. These may be either spacial, temporal, objective or subjective.

The limitation of space is due to our restricted field of vision, which allows us to see only a very limited region at a time. Even when we receive a succession of images, as on a railroad journey, they do not resolve themselves into a complete picture. In fact, experience has shown that our recollection of a region through which we have traveled is made up of a series of individual images which do not form a homogeneous whole.

The limitation of time is based on the fact that all visualization through the senses is dependent on a concrete impression. Geographically this is important, as the appearance of a region we see before us depends on the state of the sky and the light conditions resulting therefrom. These govern our impression; but they are temporary factors only, and geography is interested not in the single moment but in the whole span of time. He who lives in a certain region and is a close observer of nature may carry with him a great many images which, together, will form a unit. He who sees a region but once while traveling through it must be able to make allowances for its momentary appearance—which may be exceptional—in order to visualize it in its true geographical aspect.

The objective limitation is due to the inherent nature of geographical phenomena. Thus, a great number of phenomena, such as the climatic elements—with the exception of nebulosity,—the physical and chemical conditions of water, to a certain extent also the composition of the earth's rock mantle, cannot be grasped directly through the medium of the eye.

The last limitation is that of our subjectivity. With the exception of such synthetic geniuses as were Leonardo da Vinci and Goethe, we are only to a limited extent capable of changing the impressions we receive from the outer world into vivid conceptions, and, to a still less extent, of retaining these conceptions in our memory. Geographical instruction, therefore, which is based only on the appeal to the senses, would, for the great majority, prove inadequate.

For the various reasons enumerated sensual visualization must be supplemented by mental visualization. Mental visualization can be attained through the coordination of concepts which have been gained either by direct observation or by reading or by oral instruction. This form of visualization, therefore, presupposes a conceptional analysis of nature; its function is a synthesis of the facts thus derived. Thus, in geography, the relevant procedure consists, on the one hand, of uniting into a homogeneous whole the facts furnished by diverse sciences with regard to a certain individual locality, or, on the other hand, of investigating the relations of different localities, and grouping them into regional units. Two mental images of a region may, therefore, be obtained. The one, gained from direct personal observation, is vivid but often does not make for a clear conception of its general relationship. The portrayal of this image requires a vivid and imaginative style. The other, of paler colors and less variety of form, is simpler and more schematic, but for that reason more synoptical, clearer, more definite. It requires a precise and sober style.

The tendency to outer or to inner visualization will vary with the individual. It will depend upon the opportunities he has had for travel, for studying geographical pictures and the use he has made of these opportunities. But, more especially, it will depend upon his temperament, *i. e.* on the greater development of the faculty for direct observation and retention or for the elaboration of complicated processes of thought, as the case may be. Both mentalities may well lay claim to geographical culture, and it would be unjust to value more highly the one or the other or the geographical culture based upon it. But he who aspires to geographical culture must make use of one or the other of the two methods. He who cannot visualize geographically, he whose geographical knowledge is only limited to facts and processes, will never make a good geographer nor will he be able to apply his knowledge fruitfully.

We thus see that the most important function of geographical teaching is to convey a vivid image of the countries and regions of the world. If it fails to do so it is not worthy of the name. The change from word geography to map geography, the substitution of a thorough comprehension of the geographical ground plan for a knowledge of geographical names only, represented a great step in advance. But the ground plan alone is only the outer form, the shell, as it were, which is devoid of importance and educational value unless it be supplemented by the power to visualize the regions and countries of the world. A number of modern teachers have clearly recognized this to be the object of geographical instruction. To this goal two paths lead, and not one or the other but *both* must be followed to insure attainment, partly because they supplement each other, partly because, according to their respective temperaments, pupils will prefer either one or the other and will reach the goal most easily by the method most suited to them. The introduction into the schools of geographical excursions and the use of pictures in teaching represented a great advance pedagogically, for the pupil should always be taught to observe nature at first hand. But direct sensual visualization will profit the majority little and some practically none, if it is not supplemented by mental visualization, which is based on the synthesis of facts seen, heard or read. Description may stimulate mental visualization to a certain extent, specifically, in pointing out similarities with known regions. But this form of visualization can attain its highest development only by means of the principle of causality, *i. e.* when it is based on a clear conception of the causal relations involved. A great number of geographical causal relations are familiar even to the child and still more so to the growing boy or girl, and the recognition that one fact depends upon another or is caused by it, and that the character of the regions of the world is due not to a chance hodgepodge of phenomena but represents an orderly and harmonious whole, cannot but enrich and mature the youthful mind.

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